

REMARKS

Reconsideration of this application is respectfully requested in view of the foregoing amendment and the following remarks.

As a preliminary matter, the Applicant acknowledges with appreciation the indication of allowable subject matter in claims 16 and 17 of the present application.

By the foregoing amendment, claim 1 has been amended. Claim 13 has been previously canceled. Thus, claims 1-12 and 14-24 are currently pending in this application and subject to examination.

In the Office Action mailed May 17, 2007, claims 1-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lim et al., U.S. Patent No. 6,369,622 ("Lim") in view of Tokumitsu et al., U.S. Patent No. 6,529,051 ("Tokumitsu"). Claim 14 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Lim in view of Tokumitsu and Emberty et al., U.S. Patent No. 6,545,481 (Emberty"). Claims 15 and 18-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lim, Tokumitsu, Otaka, U.S. Patent No. 6,100,731 ("Otaka"), and further in view of Emberty. Claim 23 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Lim in view of Tokumitsu and Takahashi, U.S. Patent No. 6,072,374 ("Takahashi"). Claim 24 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Lim in view of Tokumitsu and Dougherty, U.S. Patent No. 4,658,323 ("Dougherty").

It is noted that claim 1 has been amended. To the extent that the rejections remain applicable to the claims currently pending, the Applicant hereby traverses the rejections, as follows.

Claim 1 Recites Patentable Subject Matter

Regarding amended claim 1, the Applicant respectfully submits that nothing in the cited art, taken alone or in combination, discloses or suggests at least the following combination of features of the present invention: “a waveform combining section for generating a combined waveform by combining signal waveforms of the same polarity obtained by wave-rectifying the fundamental signal and the phase shift signal; and a comparator section for comparing the combined waveform with a variable comparison threshold value to output a multiplied waveform,” as recited in claim 1, as amended.

The Office Action asserts that Lim discloses each and every feature of the claimed invention, with the exception of “combining signal waveforms of the same polarity obtained by wave-rectifying the fundamental signal and a phase shift signal.” See Office action at page 3. The Office Action further asserts that Tokumitsu cures this deficiency in Lim and that it would have been obvious to one of ordinary skill in the art to modify the frequency multiplier of Lim with the teaching of Tokumitsu for the purpose of “canceling the fundamental and odd harmonics while enhancing the even harmonics.” Id.

The Applicant respectfully disagrees with the assertions in the Office Action. As noted above, the cited art, taken alone or in combination, fails to disclose or suggest each and every feature of the present invention, as recited in amended claim 1.

Furthermore, the Applicant respectfully disagrees that one of ordinary skill in the art would have been motivated to combine Lim and Tokumitsu at the time the invention was made.

In Tokumitsu, fundamental and odd harmonics are mutually cancelled and even harmonics are mutually enhanced. This operation is realized by adjusting drain currents in FET 10 and FET 11, the respective drains being connected to each other. The waveform to be produced is a round wave (see col. 1, lines 32-45). Tokumitsu is directed at producing a multiplied round wave provided that the drains in FET 10 and FET 11 are connected to each other and that the drain currents are adjusted.

In Lim, a voltage comparator converts each phase-shifted signal into a square-wave signal, and a logic operation is performed on the converted signals (see col. 2, lines 45-49 and col. 3, lines 48-50). Lim is directed at producing a multiplied square wave under the condition that the square wave is produced in accordance with the voltage level of each phase shift signal.

Although Lim and Tokumitsu have a similar object of producing a multiplied waveform, their objects differ in at least one significant respect, as follows. Lim is directed at producing a multiplied waveform of a square wave, while Tokumitsu is directed at producing a multiplied waveform of a round wave. Due to at least this significant difference, the circuits of Lim and Tokumitsu are configured differently.

Because Lim and Tokumitsu necessarily have different circuit configurations to achieve their differing objectives, their electronic operations also necessarily differ. The circuits of Lim and Tokumitsu cannot be adapted to operate in combination with one another, and one skilled in the art would have no motivation for such adaptation. Furthermore, because the cited references teach away from their combination, the references cannot be combined.

For at least these reasons, the Applicant submits that claim 1, as amended, is allowable over the cited art of record.

Claims 2-12 and 14-24 Recite Patentable Subject Matter

Regarding claims 2-12 and 14-24, the Applicant respectfully submits that each of these references depends from allowable claim 1, and is therefore allowable for at least the same reasons, as well as for the additional subject matter recited therein.

Conclusion

For all of the above reasons, it is respectfully submitted that claims 1-12 and 14-24, are in condition for allowance and a Notice of Allowability is earnestly solicited.

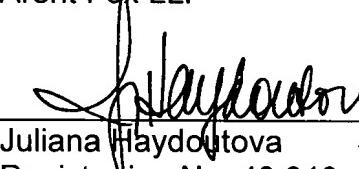
Should the Examiner determine that any further action is necessary to place this application into better form, the Examiner is invited to contact the undersigned representative at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicant hereby petitions for an appropriate extension of time. The Commissioner is hereby authorized to charge any fee deficiency or credit any overpayment associated with this

communication to Deposit Account No. 01-2300 referencing client matter number
024016-00026.

Respectfully submitted,

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Enclosures: **Petition for Extension of Time (two months)**